

# Arsenii Ashukha 🤖

Research Scientist at Samsung AI Center Moscow

PhD Candidate at Centre of Deep Learning and Bayesian Methods NRU HSE

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## EDUCATION

- PhD in Computer Science, **Centre of Deep Learning and Bayesian Methods NRU HSE**, 2017 - 2021  
Topic: Applications and understanding of variational inference in deep learning, Advisor: Dmitry Vetrov
- MSc in Computer Science, **Moscow Institute of Physics and Technology**, 2017 (with distinction)  
Thesis: *Sparsification of DNNs probabilistic framework*, Advisors: Dmitry Vetrov and Alexey Dral
- BSc in Computer Science, **Bauman Moscow State Technical University**, 2015  
Thesis: Bigram anchor words topic modeling, Advisor: Natalia Loukachevitch

## PROFESSIONAL EXPERIENCE

- Research scientist at **Samsung AI Center Moscow** (2018 - Now):  
Focused on ensembles of DNNs, and uncertainty estimation.
- Research scientist at **Yandex Research & University of Amsterdam** (2017 - 2018):  
Focused on a group-level sparsification and uncertainty estimation.
- Research Intern at **Lab of Deep Learning and Bayesian Methods HSE** (2016 - 2017):  
Focused on a sparsification of DNNs and incremental learning.

My responsibility included: selecting research directions, scheduling and executing research agenda, developing machine learning models and algorithms, writing papers. Together with colleagues, I published more than ten works at leading AI conferences and workshops.

*Before the deep dive into research, I worked as a machine learning engineer at Rambler and Yandex (Russian tech giants), where I worked on a variety of industrial problems that required creating machine learning models and processing a massive amount of data. Such problems include recommendation systems, advertising systems, and music processing.*

## REPRESENTATIVE PAPERS

- **Arsenii Ashukha\***, Alexander Lyzhov\*, Dmitry Molchanov\*, Dmitry Vetrov  
**Pitfalls of In-Domain Uncertainty Estimation and Ensembling in Deep Learning**, ICLR (2020).
- Kirill Neklyudov\*, Dmitry Molchanov\*, **Arsenii Ashukha\***, Dmitry Vetrov  
**Variance Networks: When Expectation Does Not Meet Your Expectations**, ICLR (2019).
- Andrei Atanov\*, **Arsenii Ashukha\***, Kirill Struminsky, Dmitry Vetrov, Max Welling  
**The Deep Weight Prior**, ICLR (2019).
- Andrei Atanov, **Arsenii Ashukha**, Dmitry Molchanov, Kirill Neklyudov, Dmitry Vetrov,  
**Uncertainty Estimation via Stochastic Batch Normalization**, Workshop Track ICLR (2018).
- Kirill Neklyudov, Dmitry Molchanov, **Arsenii Ashukha**, Dmitry Vetrov  
**Structured Bayesian Pruning via Log-Normal Multiplicative Noise**, NeurIPS (2017).
- Dmitry Molchanov\*, **Arsenii Ashukha\***, Dmitry Vetrov  
**Variational Dropout Sparsifies Deep Neural Networks** ICML (2017).

Full list: [scholar.google.com/citations?user=IU-kuP8AAAAJ](https://scholar.google.com/citations?user=IU-kuP8AAAAJ). \*equal contribution.

## MISCELLANEOUS

- **Reviewing:**
  - Conferences:
    - International Conference on Machine Learning, ICML (2019, 2020 top-33% highest-scored reviewers)
    - Neural Information Processing Systems, NeurIPS 2019 (top-50% highest-scored reviewers)
    - International Conference on Learning Representations, ICLR (2020, 2021)
  - Workshops:
    - ICML Workshop on Invertible Neural Networks (2019, [invertibleworkshop.github.io](https://invertibleworkshop.github.io))
    - Bayesian Deep Learning Workshop (since 2017, [bayesiandeeplearning.org](https://bayesiandeeplearning.org))
- **Thesis (co-)supervision:**
  - Alexander Lyzhov (PhD Candidate at HSE, Samsung AI Center)
    - Deep Neural Network Ensembles: Analysis and Approaches to Diversification (MSc, 2020)
  - Andrei Atanov (PhD candidate at EPFL)
    - Effective Learning of Deep Neural Networks Ensembles (BSc, 2018)
    - Learning Deep Models with Small Data (MSc, 2020)
  - Evgenii Nikishin (PhD candidate at Cornell)
    - Stability Improvement and Knowledge Transfer in Deep Reinforcement Learning (MSc, 2019)
- **Teaching:**
  - Supervisor of scientific seminars on machine learning at HSE and Yandex (since 2017)
  - TA at **DeepBayes** Summer School on Bayesian Deep Learning (since 2017), <http://deepbayes.ru>
  - Machine Learning at MIPT: TA (2016), Lecturer and manager (2017, 2018)
- **Open-source contributions:**
  - See <https://github.com/senya-ashukha>.
  - Extremely simple implementations of ML algorithms that I made just for fun:
    - Density estimation using Real NVP, <https://github.com/senya-ashukha/real-nvp-pytorch>
    - Quantile Regression DQN, <https://github.com/senya-ashukha/quantile-regression-dqn-pytorch>
    - Gradient boosting, <https://github.com/senya-ashukha/simple-boosting>
- **Languages and Keywords:** I'm fluent with Python which is my love, I use to code on C, Go, language is not a problem after all. I'm also fluent with common python libs such as NumPy, Matplotlib, scikit-learn, etc. My primary deep learning framework at the moment is PyTorch which is my absolute love, prior to that I had a decent experience with Theano+Lagange and some experience with TensorFlow.
- **Yandex School of Data Analysis:** During my MSc degree, I learned many fundamentals of machine learning and algorithms at Yandex School of Data Analysis e.g., Machine Learning, Bayesian Machine Learning, Optimization in Machine Learning, Deep Learning, and Graphical Models.